Chapter

The Immutability of the Core Construction of a Chair: The Building Techniques from Ancient Egypt to Contemporaneity

André Patrício

Abstract

Since the discovery of the now well-known and preserved examples of furniture found in several *per-djet* of ancient Egypt's Old Kingdom (c. 2686–2160 BCE) and New Kingdom (c. 1550–1069 BCE) it was possible to analyze in detail each object uncovered, revealing how it was built, the composing materials, the techniques that maintained it together and other elements present in its composition. The most interesting fact for this study is that, upon analysis, there seems to be interesting similarities between construction techniques used to assemble both ancient furniture and the ones used nowadays for the same purposes. To test the hypothesis, this paper is focused in three particular objects, the Solid Ebony Chair of *Tutankhamun* JE 62033, from KV62, and the Chairs of *Hetepheres* MFA 38.957 and *JE 53263*, from G7000X, -a much older chair- and analyses its structures, the materials and techniques used to assemble them, the similarities and dissimilarities, if any, between these two examples and to see if the is any correlations with them and their analog structures built three and a half millennia later, in our current days.

Keywords: ancient Egypt, chair, *Hetepheres*, *Tutankhamun*, contemporaneity

1. Introduction

Each civilization follows a path according to its own rhythm. This evolution may be defined by the choice of its main location, internal and external political situation, growth and economic prosperity but mainly the internal cultural differentiation. The appearance of an artistic mind is paramount to allow a growth from the satisfaction of basic needs to allow the emergence of more complex ones, a phenomenon that in ancient Egypt, seems to have happened in the so-called elite in a very early moment in time but not as evident in the majority of the population [1]. Based on what is now know of ancient Egyptian practices and customs of daily life, mainly known through iconography and what reached our moment in time, although rough pieces of furniture seem to be transversal to the civilization, most of the Egyptians did sit or squat and slept on the floors [1]. In our days, such behavior would be considered very disconformable on a day to day living basis. In Egypt, some of those who lived in poorer conditions did have some basic stools, chests or baskets, used primarily for minimal comfort, food conservation or simple storage [1, 2].

One establishes here that furniture, chairs, beds, well-build chest, footstools, and so on, were, indeed, pieces belonging to a specific elite, which tended to use it, supposedly in daily live and, this is quite an academic interesting debate—ancient Egyptians, commonly took they earthly belongings with them to their *per djet* or had copies made to accompany them for their last address [1, 3].

The evolution of the production of furniture itself is also associated directly with both a development of taste, a search for comfort and, also with the development of a core system of beliefs alongside the need of protection. Both always accompanied these same evolutionary processes.

So, firstly an elite chair, in ancient Egypt, has the use of extraordinary rare pieces of elements such as woods, ivory, gold and often several other elements to decorate household items, something used not only for a question of status they represent by themselves, interlinked with the beauty directly related from their compositions—but many times with a special relation with the symbolic meaning of many of their components and colors. Nevertheless, the search for comfort seems to have always been part of the equation, if one takes in consideration the evolution of the chair, from the Old to the New Kingdom. It is noticeable the *crescendo* of quality items over time inside elites' households who gradually found means to acquire their security and therefore could pursuit other needs in life. In our contemporary society, the same does seem to apply [1].

Through millennia, from ancient Egypt to our more modern days, somewhat the same globalization of furniture on the western world also happens, although not based in a real security but in a false sense of need of acquisition, even though the quality at its core is not exactly durable and certainly not the main focus, but rather aesthetics and low price.

Even though the ancient Egyptian elite could feel it relatively secure, no chair was just a chair, or furniture, for that matter. The charge of symbolism attached to every single object, designed by a craftsman was very high. In the materials chosen, the designs incorporated, the colors of the scheme presented and even the type of legs, or any other detail of a furniture made would serve more than a purpose to lay or sit or even eat off. The finished product would frequently be protective with a help of, at least, a deity, working as sort of an amulet, protecting or having some kind of intrinsic power or protective action or inscribed spell to maintain enemies at bay. This was one of the main objectives of any ancient Egyptian furniture. Try as anyone might, other than simple utilitarian furniture not-belonging to an elite member, it is, for now, impossible to find, at least, a piece without some symbolic meaning attached to it. Interesting examples, not focused in this paper, would be find in well-known pieces such as the Chair of *Sat-Amun*, now in the Museum of Egyptian Antiquities in Cairo, JE 5342, or some furniture, like the *Tutankhamun*'s Footrest, in the same Museum, Carter Object 092, where the pharaoh stood upon his enemies during audiences with them, to prevent the envoys of foreigners of arming him or Egypt. Here it enters a complex world of ancient belief system that had been in work for centuries. Such preoccupation seemed to be on the Egyptian mind. This belief and the action to counter act it made the ancient Egyptians even more interesting and its culture an ever deeper one to understand, for, in fact, nobody understood what was really going on behind all that reserve, smoke and spectacle that made the Egyptians fearful in the eyes of the world for quite some millennia...

Even *Hatnofer*, mother of *Sennemut*, Vizier of *Hatchepsut*, in the privacy of her home, had a chair filled with symbolism, on the center a figure of Bes, a powerful apotropaic deity, protector of children and pregnant women, and a combination of *djed* pillars and the *tyet* amulets to protect her household, her children and herself. Here, one can see magic been used between Egyptians themselves. Such a work

most certainly would have been generalized if it was possible to afford such an item, and for some foreigner, that would simply be stranger and incomprehensible, but for an Egyptian, the message would be loud and clear [3–5].

Extremely relevant to this paper is to establish the point on which one can really focus and start to understand the "beginnings of the story of the chair" [6].

In the specific period one is analyzing here, due to its distance in time, one is inevitably restricted to what was left behind by an Ancient Civilization, whose way of life, practices and costumes were extinct almost two millennia ago.

The extreme climate conditions of Africa, specifically Egypt, works to one's advantage. The heat and inexistence of humidity paired with burial sites usually under rocks that protect wood elements from heavy deterioration, helps to maintain a dry climate that tends to conserve wood for several thousands of years [7].

The first real unearthing of such an item, where one has to consider the beginning of the history of furniture, happened exactly where people's mind tends to go when one's asked, "tell me something about Egypt..."

The mind tends to recall the Pyramids of the Giza Plateau. Structures built during the Old Kingdom (c. 2686–2160 BCE).

It is exactly during this time in history that the first pieces of furniture where placed on the Giza Plateau, dating approximately c. 2600–2500 BCE. They were found on the twentieth century by the excavating team of George Reisner and eventually brought to light. They are considered to this day the most ancient preserved pieces of furniture in our Planet. This will be analyzed in a section below [8].

However, long before this period, during Dynasty I, in Tarkhan, already bovine shaped pillar legs carved in wood with perfect joints of mortice and tenon, supposedly belonging to long beds, had been encountered. The difference here is that they did not make part of a complete structure. This indicates that furniture production was in effect in ancient Egypt far sooner than Dynasty IV, as it is also attested by the ceiling Stelae of Princess *Nefer-meri-ka* in Helwan, Tomb 246 H8 and Prince *Nisu-Heqet* also in Helwan, Tomb 946 H8, from Dynasty II, were one can see the royals sitting in front of tables or even the iconographic designs of a bed, stool and chair on the tomb of *Hesira* in Saqqara, Dynasty III [9].

It is, unquestionably clear that in ancient *per djet*, from all the periods of Ancient Egypt lays the answers one is looking for and certainly more questions that have ever been asked.

This paper will present a curious case of a chair that has being reproduced, and is currently in Boston, using an extraordinary effort to try and be truthful to the original and use its sister chair that has been restored and is in Cairo to compare the difference between execution techniques separated by 4 millennia and 7 centuries.

The other chair is a fine example of a Dynasty XVIII chair, built and only conserved, never again retouched.

For both of them one proposes a careful analysis, focusing on main material, use of extra-materials and techniques to incorporate them as well as forms used to include complex designs.

During this exposition, one will point out joints, the technological advance in furniture building in general, and chairs in particular, is the development of several joints to unify different parts of wood. For joints make a wood structure extraordinary resilient structure, the, use or absence of nails and methods of embodying other materials on the main object [10].

In the final discussion contemporary techniques will be paralleled.

Several questions did take form when one started pondering all this information, how similar could have been the construction techniques used then and now? Have these two civilizations developed so different woodworking techniques, or are they strangely similar?

Would we understand the processes and the steps they took?

Between the ancient Egyptians and our current civilization stands four and a half millennia, a vastness of time, and eventually of evolution. Would this be significative, or did we have analog evolutions in technical expertise?

How well did our current knowledge of carpentry reproduce an ancient Egyptian chair?

All these seem valid question to start analyzing closely the two examples selected.

2. The Chairs

2.1 The First Chair

Tutankhamun is, perhaps, the most well-known monarch of all ancient Egyptian history. Not because of his deeds or long life, but because of the circumstances and the findings of his Home of Eternity. His funerary paraphernalia, the British Lord who became obsessed in discovering everything the Tomb had to offer and eventually died in the process, together with other members of the excavations, all the publicity around a supposed "untouched tomb" that circulated the globe for years... A reflex of the might of Egypt over a World that had only seen a glimpse of a past civilization [11]. That specific moment in time, 1922, transformed the face of the Earth with new ideas about the Great Ancient Egypt, approaching the idea to the imaginary of people that had never contacted with Egypt or with its past. It was the beginning of reception by the masses, seen in the creation of Cafés, private rooms, furniture, bric-a-brac, and an assortment of material that would eventually bring Egypt and its culture nearer the common people of Europe and Americas.

In truth, the pharaoh lived during Dynasty XVIII, having ascended to power still in *Akhetaten* (Tell el-Amarna) very young. His father, *Akhenaten* died (c. 1352–1336 BCE—years as pharaoh) *Tutankhamun*'s older brother, *Smenkhkare* (c. 1338–1336 BCE—years as pharaoh) was in the throne. It is commonly suggested that *Nefertiti*, under the name *Neferneferuaten* could have also been a pharaoh and reigned after this pharaoh or another unknown individual, presented with the name *Ankhkheperure*, that is hypothesized to have been either *Smenkhkare* or *Nefertiti* could have occupied the throne for the four lapsed years from 1336 to 1332 [11].

In either case, the problem here is mainly chronological, for it would both explain the usually assumed disappearance of *Nefertiti* from *Akhetaten* and also the succession of *Tutankhamun*, as *Tutankhaten* circa 1332 BCE, 4 years after the death of his father. The boy—pharaoh still governed from *Akhetaten*, apparently the well-established capital of the empire at that specific time [12].

According to current data, he reigned for a total of a decade and not much is known about his direct orders or actions. However, important actions took place during his reign. A continuation of what had started a few years back, after the death of his father. In Thebes, Amun had started gaining an increase number of loud followers, in the great temples, and all over Egypt the ancestral religions were getting back to their normal functions. The most curious aspect is that no retaliation happened from *Akhetaten*, neither any retaliation happened against the Horizon of the *Aten*. There is an interesting Stelae where the pharaoh states that he, himself, restored and returned all the favors of the ancient Gods to Egypt, an incredible propagandistic form to start a new reign, for a child with around a decade of age. However, it is perception that tells the story, and the story is what it is always remembered, When *Tutankhaten* performed the coronation ceremony, he changed his name to *Tutankhamun*, in fact, but his first name did not disappear, and neither did the iconography of *Akhetaten* in many of the furniture that surrounded him, until 1922 AC [12].

As a new Pharaoh, it was time to leave The Horizon of the *Aten* and start to manage the empire from an ancient Capital.

Such a fate, as it seems, was not to be, and the pharaoh did die very young. Critics refer to the tomb of *Tutankhamun*—KV 62, as a very small space, hastily finished to accommodate the prematurely departed "boy-pharaoh" [13].

However, in this aspect, the pharaoh really did leave a mark. His House of eternity supplied pieces of incalculable scientific value like no other to this day.

Many of those belong to the furniture section. The chair chosen for this paper illustrates not only the best of ancient Egyptian art in furniture, but also the best of technique applied to fine wood construction and superb execution.

2.1.1 Analyzing the Solid Ebony Chair of Tutankhamun JE 62033

Figure 1 shows a 45° angle of the Solid Ebony Chair of *Tutankhamun*.

This chair is currently at the Museum of Egyptian Antiquities in Cairo and was discovered by Howard Carted and Lord Herbert, Earl of Carnarvon, in 1922 inside KV 62—The Tomb of *Tutankhamun*.

The funerary paraphernalia was immense, as the world came to know, but this so very special chair is going to take central stage in this paper.

Its conservation status being quite good, as if it was left inside a mere couple of days before the tomb was opened, was surprisingly rudely placed inside the antechamber of KV 62, below one of the ceremonial beds—The Lioness Bed—along with several other items such as the Black Shrine-shaped box on sled (object Carter 38),
or the extraordinary Chest of ivory, ebony, and red wood (object Carter 32),
as examples.

Despite its rude deposit and its long sleep for more than c. 3200 years it arrived at the twentieth century in perfect condition, ready to be carefully analyzed.

This chair is one of six chairs found inside KV62.

Figure 1.
Solid Ebony Chair of Tutankhamun. ©The Griffith Institute, University of Oxford. Physical characteristics: The chair has the following measurements (in SI units): height, 0.715 ml; width, 0.406 m; depth, 0.391 m [13].*
**International system of units.*

Due to its size, it has been classified as a "Chair of a child" [13].

It was initially classified as Object Carter 039. The Museum of Egyptian Antiquities of Cairo has the ascension number JE 62033.

It is mainly made of ebony. This wood, for the ancient Egyptians, was extremely rare and a hard to find type of wood. It was not native from the land, and also rare in the empire even in the dominated lands the New Kingdom had under its control, so to have access to such wood in vast quantity would probably signify that it came from either commercial exchanges, something very frequent during the New Kingdom, or the payment of tributes, a practice the early New Kingdom Pharaohs, mainly *Tuthmoses* III, approximately a century before, started enforcing to maintain control on constant insurrections in further territories. Whatever the case, this wood could have only come primarily, has since the Old Kingdom, from either the Western most part of the African Continent not very acessible areas [14].

In the time of *Tutankhamun*, one sees the results of such tributes on the production of the so-called luxury items with an extreme perfection, but not to the extent seen years before, during the time of *Amenhotep* III.

The other components of this chair are ivory, gold, and some gilded bronze pieces and natural color bronzed "shoes", according to the Carter cards, from the Griffith Institute [1, 14].

2.1.2 Building the Chair JE 62033

This chair is made of six essential parts, legs, seat, arms, backrest, chair supports and back supports.

The legs are exquisitely carved pieces, two by two, mimicking the front and posterior legs of a lion sitting in bronze gilded drums, a common theme that intended to symbolically both elevate and protect the one who seated in the chair. In this particular case, an elegant detail was added, and the claws were made with ivory [15].

To give the chair extra-support four wood cylinders—the stretchers—with dowel joints would be docked between the legs that in turn docked with the carved lion legs using the same mechanism, reinforced and decorated with gilded bronze pieces one can see on the extremity of each side of the stretcher. Using the same joint, the dowels, from each stretcher four smaller ones extend to the seat of the chair reinforcing it. All and all, the visual aspect of the design is actually very pleasing, it allows for a visual effect that is completely agreeable when one sees what the craftsman was aiming for, which was a very complex but also secure structure. It is this, seemingly undecorated work that supports the overall structure of the chair in its entirety [10, 16, 17].

Although the chair seems to be a normal Egyptian chair, it is far from it. This type of seat is called a double-cove and it is a hard one to take form, and much harder to make it last for millennia. Granted, that it is very comfortable, but the execution and mainly the guarantee that it endures is probably a nightmare. It was a test on how good the craftsman really was. The trick started with the legs. They had to be higher than usual. It is common to see this type of furniture referred to- the Egyptian also sat frequently in stools—as high leg chairs or stools. The hard part does start when all the rest has to be kept in place, ergo the extra reinforcements talked supra.

In terms of execution, the wood has to be slightly bended before it could be placed in its final position. If one looks to the image, the most certain way to guarantee no bad future results with the piece is exactly by applying some nails where the legs enter the set.

The frame of the seat is unified with a series of four joints of the type mortice and tenon with shoulder. After that, an old technique from the Old Kingdom is used to fixate the seat to the legs—the lower part of the chair is fixated using a series of

leather or linen bindings that passed through holes cut in the legs and the frame of the seat, maintaining the lower superstructure united [16].

After this process is concluded, the sides of the legs are secured with gold nails, as it is visible in **Figure 1**. The major part of the structural integrity of the chair is done.

Regarding the seat, Carter described in his camp book, open access at the Griffith Institute, that the seat had five "slats (material unknown—but probably either cedar or ebony) fitted in to the framework". The material analysis is not ideal, one did not find another one, but it is known that the wood had been color treated to resemble with some type of resin to resemble ebony [10].

It is safe to assume that the chair had probably a pillow when in use, so the material on the seat could have taken a secondary concern.

The work in the arms and back, were extremely interesting. The principle used for fixation was the common use of joint of mortise and tenon with shoulder. In the situation of the arms they had four support points, the base, the backrest, the gold "L" plaque, fixated with nails, that enforced a connection to the seat and the wood piece that contour and gave them both extra resistance and comfort to whom whore the chair. It is extremely important to note that the arms are a mixture of two types of art. The first one is, of course, carpentry. The whole chair was made by a master artisan, it presents itself with no fault, a superb work, with clear lines, complex angles made with no worry and extreme devotion, but then there was also the work of gold workers, probably jewel makers, with an extremely accurate eye for detail.

It is not clear for a naked eye to see the detail of the pieces that are on the stretcher's finials, and it is even harder to see the bas-relief of what is happening on the side of the arms. In a parallel note, because it is not an excellent detailed image, both arms are decorated on the outside and inside. On the outside there are wounded oryx and desert plants, surrounded by scroll patterns, and on the inside a simple desert plants surrounded by common patterns [18, 19].

To fixate the golden element inside the four parts of wood of the arm, a housing joint would have been the most appropriate technique used. In itself, the arm took form with an invisible mortise and tenon, with shoulder, to control any possible risk of damage. To the back the same method was used.

During the late Dynasty XVIII, there is already an inclination of the back, visible in **Figure 1**. That was possible due to the existence of stiles and a central brace that allows the support of the weight of the person [20].

The chairs from this time period tended to create an illusion. They seemed to end where the back ended if looked from the front, but in truth the backrest was several centimeters in front of the back legs.

From the back legs a structure was raised composed by three vertical pieces of wood that would unite to the backrest on the headrail. Therefore, the chair eventually had a more ergonomic feel when sitting. These three vertical structures would be fixated with mortice and tenon to the back braces and mortice and tenon with shoulder to the head rail. The backrest was placed on the seat, in this case, with a stub-tenon joint and in the headrail with a same mortice and tenon joint with shoulder [16].

On the backrest artisans gave free reign to their imaginations and made the most marvelous inlays of ivory, as one can observe in this specific chair. Inlaid with ivory contrasting with a darker color surrounding it, with an incredible work of detail this chair is one example of the finest ancient Egypt art has to offer. It is important to refer that also here the same mortise and tenon with shoulder were used, always showing the extreme carefulness used to maintain invisible any unions between different parts of wood and the re-use of gold nails for structural and decorative purposes. In one final detail, although the back-rest of this chair is indeed made of ebony, there is an impressive extra detail associated to it. All the ebony was covered

by papyrus strips glued to the wood and colored by the same resin used in the seat to acquire the color of ebony. If nothing else, it is an extremely decorative step to make with such a usually marvelous wood [16].

Could the explanation be associated with the need to give a strange texture to the chair? Or to demonstrate an extravagant behavior? Maybe it is not what one would consider Egyptian, but upon the analyses of this chair, this is indeed a strange fact. Perhaps the reason is simply related to the quality of the wood, it was not completely homogeneous.

The extra concern for the use of four gold reinforcements, two between the seat and the arms and two between the seat and the stiles seems to indicate that the chair might have had, at some point, the need of repairs, which could explain the need for a repair of the backrest.

The use of golden nails on the upper side of the backrest also seems to indicate the same. Maybe the use of such a delicate chair by a young pharaoh could have been more than the chair was prepared to handle. They do not seem to be structural at all but can very possibly have been placed to reinforce the connection between the backrest and the structure behind it, in case the elbow brace originally placed to maintain the central brace was not being enough [17].

On a final note regarding structural reinforcement, usually between joints it was used some kind of natural glue to increase the resistance of the piece. Ancient Egyptians used commonly gesso and either a natural adhesive or resin, usually Acacia gum, as found in the joints of the furniture of KV 62 and in this chair here presented [21].

2.2 The Second Chair

Approximately 4600 years ago (c. 2600 BCE), the sarcophagus of *Hetepheres*, wife of *Snefrw* (the first pharaoh of this dynasty), mother of *Khwfw*, the builder of the great pyramid, was descended and finally placed in "eternal" rest, with no body inside, in the shaft tomb now numbered G7000X, in Giza [22].

Several items compose the funerary paraphernalia including the oldest preserved pieces of furniture in the World: a canopy, a bed, two chairs, a carrying chair and a curtain box [1]. The originals are now in the Museum of Egyptian Antiquities in Cairo. The team that was excavating the place and eventually unearthed the tomb was working for the Museum of Fine Arts in Boston. Per contract, if they ever discovered a sealed tomb, all the contents would remain in Egypt. It took them 23 years to find the Tomb of *Hetepheres*.

The original Egyptologist on site was Reisner that, unfortunately, had to leave Giza exactly when G7000X was uncovered. But that was not the worst part for him. When he arrived and started cataloguing everything, he noticed that there was something peculiar. There were fragments that did not match anything they had found. And from that day till his death he initiated a reconstruction project trying to find what it was. He never did, although he had a very close idea. After his death, his project went on and in 2017 finally the project was ended, a second superb chair made out of intense archaeological survey, deduction and multidisciplinary participation returned to life, in a form of a reproduction. Reisner dream did become truth [8].

The second chair of queen *Hetepheres* is of unprecedented beauty for that dynasty. The arms, in the form of flying falcons, carved in wood and embellish with inlayed faience and the details of the back are breathtaking. This is, however, not the chosen chair for this article, but is extremely related to it, in form and technique.

The one showed here in **Figure 2** is in exposition at the Museum of Fine Arts in Boston. The reconstructed resides in the Museum of Egyptian Antiquities, in Cairo, which makes this pair a special case, for one immediately thinks about the notion of the reception of an object of antiquity in our contemporaneity.

Figure 2.
The Chair of Queen Hetepheres (reproduction). Photograph© [date of publication] Museum of Fine Arts, Boston. Physical characteristics: The chair has the following measurements (in SI units): height, 0.795 m; width, 0.707 m; depth, 0.660 m [9]. * International system of units.*

The chair of the Museum of Fine Arts in Boston is clearly a reproduction. All the suite of Queen *Hetepheres* in that Museum is such a case. It was executed in 1938 by Joseph Gerte, reproduced based on the one present in Cairo, for a private owner in Boston, that, in time, donated it to the museum, allowing it to be viewed by countless visitors, transporting them to a scenery of the Dynasty IV of Ancient Egypt. This is, of course, the epitome of trying to bring to another time something not quite belonging to it. Using eyes that understand most of the technique but not all the details. In fairness, Joseph Gerte did make an interesting job, trying to reproduce the original techniques and final appearance.

The reproduction is quite well executed, at first glance not that different from the reconstruction, lacking, however, the elegance and sophistication of the ones produced during Dynasty XVIII, and even by Dynasty IV, when techniques seemed to be far improved for finer cutting of wood and manipulation into that same material to more delicate patterns that present delicate details. Interestingly enough, as one will present in the following point, technical details like joints or wood carving seem to be very well underway by this time, but something seems to be missing, when compared to the original.

2.2.1 Analyzing the Chair of Hetepheres MFA 38.957

Figure 2 shows a 45° angle of the Chair of Queen *Hetepheres* MFA 38.957 from the Museum of Fine Arts in Boston, therefore, the reproduction made in 1938 by Joseph Gerte, almost identical to the Chair of *Hetepheres JE 53263 currently in the Museum of Egyptian Antiquities in Cairo*, which will be also referred to.

The shaft Tomb G7000X was sensibly 27 m underground, and was sealed during the reign of *Khwfw*, so it seems to attest the dedicatory on the carrying chair "The mother of *Khwfy.*" It allowed for 4600 years of controlled decomposition in very favorable conditions, permitting only part of the funerary paraphernalia to survive

to present days. When opened, part of the furniture was only maintained by the gold sheets, for the wooden part had rotten away. The gold, however, allowed the reconstruction of the furniture in an extremely long restoration process, but not of the above-mentioned second chair, that took almost a century to be completed [8].

This chair has an innate beauty and significance associated to it. Its iconography already represents so many of the founding beliefs and values of what ancient Egypt would be based for more them two and a half millennia after this moment in time. One here is almost at the genesis of a civilization. The Old Kingdom had all but started a dynasty before and the potential was immense. Iconography, ideals and ideas are all being formed at this point. Unknowingly Dynasty IV was the beginning of something that would last for centuries upon centuries to come.

This chair, although it is a reproduction, and here and there show signs of it, when compared with the reconstruction that had parts from G7000X, one will point out infra, brings important iconographic elements to light that both obviously have. There are three extremely significative [23].

The first one is the form of the chair. It will be the same from the Old Kingdom to the beginning of the Dynasty XVIII, New Kingdom. When compared to the chair of *Hatnofer*, both have the same 90° angles between the seat and the backrest [17]. The difference in angle came during the later Dynasty XVIII, a fact that is extremely curious. One is talking about a rigid norm in furniture making that will know absolutely no evolution in form for more than 1200 years.

Secondly during Dynasty IV, it was already canon to see represented carved front and hind legs of a lion over drums, showing the back legs longer then the front ones. The bovine legs seemed to have concurrent with the appearance of the lion legs, and an evolution of the chair and stool legs clearly evolved in this context [9].

Lastly, Heraldic flowers were beginning to be incorporated, at least, in pharaonic furniture and belongings. This was not limited to this specific chair, but to all the funerary paraphernalia of *Hetepheres*, the carrying chair and the recently restored chair are important examples of that [8, 24]. It is well established that furniture was an important vessel for transmitting not only information but also messages for those who did not understand Egyptian language. It is perhaps here that the beginning of the understanding of cultural and collective memory really started. Which is a massive step regarding a civilizational evolution point, for it's the beginning of the use of the right images and messages to convey the right information to keep *maat* for as long as possible.

2.2.2 Building the Chair MFA 38.957 and introducing the Chair of Hetepheres JE 53263

When this chair was commissioned, based on the one found in G7000X, the intent was to build it as faithful as possible. Despite that, the original chair was in a terrible state of conservation; and therefore, so much had to be improvised, which possible may account for some discrepancies [24].

Due to the recent studies on the second chair of *Hetepheres*, it is now possible to have access to the building techniques of the sister chair, the one in exposition for almost a century in Cairo and for around 70 years in Boston.

The chair in the Museum of Fine Arts, in Boston, is simpler in some parts of the design than the one in Cairo. Although one presents in **Figure 2** the one in Boston, the differences will be pointed out as a way to establish a counterpoint between construction concerns in different times.

The four legs are, as mentioned, carved wood legs in the form of front and hind lion legs, very detailed and sit upon drums covered with gilded copper.

As usual each leg has tenons with shoulders that will fit the mortices of the seat.

The seat will create a frame where the two side rectangular woods would have mortices that fit both the legs and the other two parts of the seat itself. Both chairs had the lower section reinforced with golden nails.

According to the current hypothesis, it is not sufficiently accurate to hypothesize what made the backrest and the seat, although based on iconography, it is thought that this type of chair would have pillows. In any case, both the Cairo and the Boston chairs ended up with a plain wood finish [8, 25].

The top armrest is made of semi-circular pieces of wood that connects to the backrest. The vertical parts of the arms of the chair are parallelepipedal, the reproduction presents the front part as quite uneventful and with almost no work at all, while the Cairo reconstruction shows them as a carved piece with vertical parallel carved work. In both versions, they are attached to the chair with a mortice and tenon with shoulder that will fit on the sit and on the armrest [6]. In the Cairo reconstruction, the joints of the front and back of the armrests are strengthened with leather strips that pass diagonally and are concealed with gold patches when appeared on the surface [25]. On the case of the Boston chair one can see the lines in the arm pieces, on the vertical and horizontal ones, where the strips actually pass. It is an interesting appointment.

The backrest by itself is an curious piece of craftsmanship. The back frame seems to slide by lateral rails and then the top rail is pushed down and stays in place with a mitred cross-halving joint and rebated with a dovetail, there staying in place [9, 19].

The last part of the chair building is, of course, the carved wood panels in form of three papyrus flowers tied with six rows of wood and place inside the armchair's sections. The three stalks of the papyrus have tenons with shoulders that fit mortises on the seat of the chair. On the Cairo chair, the papyrus flower that touches the backseat seems to have the same mechanism to be fixated, although the other two flowers on each arm panel seem to be secure with leather, not visible because all the chair is covered with gold sheets after the carpentry process [9, 19].

To finalize this part, one notes the presence of some nails in the reproduction of the Museum of Fine Arts, in Boston, mainly in sections where joints could be experiencing some problems. It would remain a question if this was a specific problem of the reproduction or a problem of the original design. It is very curious to note that they seem to replicate the exact place of the reproduction of the one in Cairo, according to photographs.

The design of this chair is extremely impressive, especially the details of the legs and the details of the papyrus flowers. The carving truly defends that on the third millennium BCE the level of perfection in complex areas was already at a very fine degree. The question now is, how high was it really, comparing to contemporaneity?

3. Final ideas

The question regarding reception is always a puzzle. Regarding Ancient Egypt, one is dealing with a civilization whose practices, codes of conduct and values, ways of life and belief have been massively extinct for almost two millennia. The ancient Egyptians did not disappear; they are still there, inhabiting the ancient land of *Kemet*. They simple follow different paths from those of their predecessors that stayed in the past for several reasons such as invasions, wars, a Planet in constant change and so many other reasons.

Then there are the Egyptologists, always searching for the past. To try and understand a civilization long gone, but still here. And why here? For some reason, when one has the slightest contact with it, one immediately embraces it. The Great Temples

of Abu Simbel, the paintings of David Roberts, a mural by an anonymous painter that alludes to Egypt, a view of the Nile. And constantly one brings Egypt to life and with no conscience of the fact, this is where reception enters in our modern lives.

However, Egypt is not only this, that illusion of a grand civilization of prosperity and greatness, of peace, or war, and beauty. Egypt is so much more than this. Much of this is what one can call reception of an ancient civilization by a new one.

In this article one has decided to go for something quite simple but tremendously essential in our day-to-day life.

Each civilization has the notion that evolves more than any other that has come or that exists along us. That's a curious way of thinking, a dangerous state of mind to have. It leads to actions that would eventually have devastating consequences. So, what better than to look to the most primary and nevertheless complex day-to-day tool all of our society uses.

A few years ago, one ended a dissertation focused on Ancient Egyptian Furniture and noticed curious aspects between Egyptian and current furniture [26].

Although twentieth-century furniture, aesthetically has lost immensely to our counterparts of the Two Lands, what about the techniques. Are we better on building chairs, or stools?

The answer is no. If anything, our civilization can still produce an amazing quality item, that is a certainty, but those are still produced to the elites, not for the masses.

Nowadays one finds extremely professional carpentries shops, auction houses selling perfect furniture and incredible Schools of Arts that either produce or sell top of the quality items, but the cost is so high that only a fraction of the population will have the means to acquire it. It is almost like the Egyptian way of life is repeating itself.

What does this mean? As a civilization, we have evolved very little regarding this specific aspect. Although we have created alternatives, being the most significative, here, the mass production of low cost furniture. Now, it is not only the elite tha has access to furniture, but still the only to high quality furniture. We adapted to what is really necessary and what seems to be dispensable. Maybe to have a full life one doesn't need to have a chair with lion legs or ivory inlaid backrests, and this is our advantage as civilization. Maybe. Will the archaeologist of the future think the same about us? Will it matter?

On a last note, the belief systems that surrounded the ancient Egyptians are not as dominant as any of the major ones existing in our current society. Although superstition, magic, fear in many forms does still exist, there is not an extension to all the aspects of life in normal circumstances, therefore, much of the symbology carried in the superb Egyptian furniture would not be seen in these current days. This been clarified, one is prepared to present the conclusion and establish the bridges between antiquity and contemporaneity regarding the chair.

4. Conclusions

The main question here would have to be focused not in the capability of our civilization to use tools of mass production of furniture that granted, it does possess; but how the basic techniques to unify and work different parts of wood are being used nowadays. And this is a really interesting question to consider. A civilization, or a determined group of people, tends to evolve and acquire the most advantageous ways to deal with a problem. After that problem has the most adaptable solution, there is no reason to keep searching for another solution to solve the same question, in theory. It is a waste of resources. Several years ago, there was an article focusing

one of the most dignified School of Carpentry in Lisbon, Portugal, that produced furniture-using techniques from the eighteenth century, FRESS [27]. Their pieces are exquisite in every sense, they are flawless, extremely durable and have an undetermined period of durability, as far as one knows, they can last generations in perfect conditions.

When doing a close analysis, today it is still used every ancient Egyptian technique in furniture production, from inlay to carving and varnishing. Even the use of glues to strengthen joints and, most fundamentally, the unions themselves find the exact same use today as they did in the so far long past. The most detectable are the mortice and tenon joints, dove tails, tenon with shoulders... basis for any contemporary furniture construction. A chair made by a carpenter today would have a mortice and tenon joint with shoulder perfectly visible in the back of the chair, on the union of the seat with the backrest. The joint used is exactly the same.

And this is an extraordinary aspect of evolution. Our civilization as achieved wonderous things, but this specific aspect, has come from the past.

So, when asking, how similar could have been the construction techniques used then and now? The answer would have to be almost the same. They are, of course some differences. Industrialization as brought some major alterations regarding the way furniture has been built. Joint are invisible, nails are practically inexistent and mainly substituted by immense screws, but those "wood" cylinders one places inside IKEA holes are, in fact tenons. The principle is the same.

Answering "Are these two civilizations so different in woodworking techniques"? Absolutely not, we are extremely similar. Maybe our need to satisfy masses is making us invent an alternative twist, but the base is the same, and it will always be.

That is why one so easily understands the process of construction of the Chair of *Tutankhamun* and that's why it was relatively easy to reproduce the suite of *Hetepheres*. But one note has to be made. There was a significant difference between the reproduction and the reconstruction in Cairo. Maybe it was the Cabinet maker, maybe it was the fact that he did not see anything except the designs, but the chair was noticably inferior to the original, although it was a good reproduction. The major fault was in the carving of the armrest. Maybe the detail was not that significative. These are, after all, only hypothesis.

This is, however, one of the main reasons why this chair was brought to this study together with its sister chair, to make a counterpoint between an example purely built during ancient Egypt, Dynasty XVIII The Ebony Chair of *Tutankhamun*, and two other, one reconstructed and one reproduced on the twentieth century The Reproduction Chair of *Hetepheres*. Original Egyptian, the original, and what can be called the result of reception of an Egyptian artifact in the past century.

This particular case of the Chairs of *Hetepheres* allows one to consider variables commonly associated with the fact that reception usually means recreation, and here one is simply referring to material culture. And this is true. Much of reception implies recreation that usually does not follow cannon, something that tends to change the overall process of what is scientific, what is real, what matters. It is one step from Egyptology to Egyptomania. Sometimes it is a dangerous step, many times it is an inoffensive one.

Dangerous is only when the absence of knowledge tried to become science. When a reproduction tries to become a recreation. There are differences.

When one started this paper, the first aspect, when studying the *Hetepheres* chair in the Museum of Fine Arts in Boston was exactly "How similar are you to your much older sister?" The answer was immediate. "Almost nothing!" The general idea was there. The feeling was there. However, the history was completely different. It didn't weight millennia. It told a completely different story. A story of a woman,

not a Queen, that was fascinated with the story of a faraway land, of a long dead monarch that had a suite she wanted for her-self. She asked someone to replicate it for her. As best as possible. This was a movement of reception of a contemporary of century XX AD to something from century XXVII BCE.

Everything has its time and definitely its place. After this, there are, of course, the way people perceive and receive what is Egyptian or what reminds them of Egypt. That's a completely different story. Here enters the Reception, which is a stupendous idea that must be fueled at all costs, for people do tend to have enthusiasm for what is absolutely amazing, and Egypt has been that for more than two centuries now. And has so much to offer.

This is the beauty of time and the fact that it flows in only one direction.

Author details

André Patrício[1,2]

1 Faculdade de Ciências Sociais e Humanas, Universidade Nova de Lisboa, Lisboa, Portugal

2 CHAM, FCSH, Universidade Nova de Lisboa, Lisboa, Portugal

*Address all correspondence to: andrehagpatricio@gmail.com

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